



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of)	
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YAMAZAKI et al.)	Unit 1794
)	
Application Number: 10/576,677)	Examiner
)	Ahmed, Sheeba
Filed: April 21, 2006)	
)	
For: MULTILAYER FILM)	
)	
Attorney Docket No. NISH.0003)	
)	

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF ONE SKILLED IN THE ART
UNDER 37 C.F.R. §1.132

Sir:

I, Hideaki Tanaka, am the inventor of the above identified application, and hereby declare as follows:

Further to the declaration submitted on September 18, 2008 and the Office Action dated January 14, 2009, it is my conclusion that specified concentration gradient structure as recited in (i) or (ii) of claim 1 and the peak ratio recited in claim 1 could not achieve by Ohba et al. (US 6,605,344), hereinafter "Ohba '344" due to the present of other polymer than a carboxyl group-containing polymer. Therefore, these features were not taught or suggested by Ohba '344.

In particular, the gas barrier film of Ohba '344 was obtained by heating a polymer layer formed of a mixture of a poly(meth)acrylic polymer and a polyalcohol at a high temperature. For example, the polymer layer was heat-treated for at 180°C for 15 minutes or at 230°C for 30 seconds. As such, an ester bond is formed between the poly(meth)acrylic polymer and the polyalcohol in the polymer layer. Since Ohba's gas barrier film has a highly crosslinked structure by the ester bond, such a film is difficult to scrap or regenerate as those according to the prior art described in [0005]-[0010] of the publication of the specification.

I and the co-inventors found that a film excellent in gas barrier properties, moisture resistance, water resistance, hot water resistance and water vapor resistance, can be obtained by

ionically crosslinking a carboxyl group-containing polymer, such as poly(meth)acrylic acid with a polyvalent metal. The multi-layer film according to the present invention has the carboxyl group-containing polymer layer ionically crosslinked by a polyvalent metal ion which does not need to be subjected to heat treatment at a high temperature because no ester bond exists. This film is neither dissolved in nor deformed by water, hot water, water vapor and the like under ordinary service conditions. The solution according to the present invention is to obtain the film by ionically crosslinking the carboxyl group-containing polymer with the polyvalent metal and to provide a gradient structure in a thickness-wise direction in the concentration of a polyvalent metal salt as recited in (i) or (ii) of claim 1. In the multi-layer film according to the present invention, the flexibility of the multi-layer film is improved because the low concentration region of the polyvalent metal salt of the carboxyl group-containing polymer is present in the carboxyl group-containing polymer layer, such that it has excellent forming and processing abilities.

Ohba '344 simply did not produce such a multi-layer film with a concentration gradient structure of the polyvalent metal salt of the carboxylic group-containing polymer and the peak ratio as recited in claim 1.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statement were made with the knowledge that willful false statements and the like so made are punishable by fine, or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-captioned application and any patent to issue thereon.

Respectfully submitted this 7th day of May, 2009

Hideaki Tanaka
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